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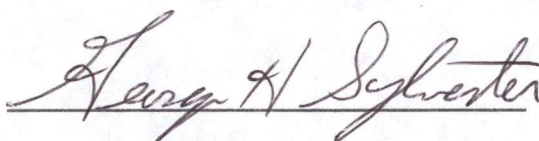
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RFI WORK PLAN ADDENDUM

VAN WATERS & ROGERS INC.
3950 NW Yeon Avenue
Portland, Oregon

EPA ID No. 009227398

Prepared by:



George H. Sylvester
Senior Project Manager
Environmental Affairs

February 7, 1991
(Revised July 3, 1991)

USEPA RCRA



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July 3, 1991

Kevin Schanilec
Project Coordinator
RCRA Compliance Section
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

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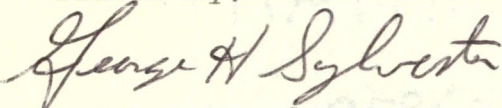
WASTE MANAGEMENT BRANCH

Dear Mr. Schanilec:

Enclosed are two copies of the revised text for the Work Plan Addendum for the Van Waters & Rogers Portland, Oregon facility. I have enclosed the most recent water-level elevation map as well.

Please be aware that I modified the language from the original on page 5 (Sampling Schedules) third paragraph last sentence. I believe the revision is clearer than the original and is more correct since the ICM Work Plan has not been approved. Please call me at your earliest convenience if you disagree with this change.

Sincerely,



George H. Sylvester
Senior Project Manager
Environmental Affairs

c: W. Grotheer - Univar

INCORPORATED INTO
RFI WPA
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INTRODUCTION

This addendum to the approved RCRA Facility Investigation (RFI) Work Plan has been prepared to describe additional work proposed to be performed at the Van Waters & Rogers Inc. (VW&R) Portland, Oregon facility (Plates 1 & 2). This work is to be conducted as part of a corrective action plan pursuant to an Administrative Order on Consent (Consent Order) dated June 15, 1988, between the U.S. Environmental Protection Agency, Region X (EPA) and VW&R. The Consent Order was written in accordance with Section 3008(h) of the Resource Conservation and Recovery Act (RCRA). The corrective action plan includes a RCRA Facility Investigation (RFI) and Corrective Measure Study.

The scope of work at the VW&R Portland facility are described in the following documents which have all been submitted in final form to the EPA:

- * Data Collection Quality Assurance Plan (DCQAP)
- * Facility Health and Safety Plan
- * Community Relations Plan
- * Data Managemnet Plan
- * Project Management Plan
- * Work Plan and Work Plan Addendum.

This addendum to the Work Plan incorporates the Work Plan Addendum submitted to the EPA on September 7, 1990 and VW&R's November 19, 1990 response to EPA Comments on the Addendum. Additionally this submittal will incorporate EPA's final comments dated January 9, 1991.

This addendum addresses the need for additional groundwater monitoring wells to be installed on- and off-site to provide additional plume characterization. Included are descriptions of:

- * Location and completion details for three additional off-site shallow monitoring wells and one additional on-site shallow monitoring well.

- * Plans for gaining access to neighboring properties as needed for well installation.
- * Proposed sampling schedules for the new and existing groundwater monitoring wells.

VW&R is committed to accurately characterizing the soil and groundwater conditions at the Portland facility. As previously discussed with EPA, VW&R is pursuing a phased approach to assess the nature and extent of contamination which may be associated with these media. Given the nature of the hydrogeologic conditions of the upper aquifer in the area (former Guilds Lake) and the high potential for multiple off-site sources of hazardous constituents, a phased approach is the most practical means to identify and delineate those chemical plumes which may have originated from the VW&R facility.

SITING AND INSTALLATION OF ADDITIONAL WELLS

Off-site Shallow Monitoring Wells

Sixteen shallow (20 to 30 feet deep) groundwater monitoring wells have been installed since 1987 (Plate 2). Analytical data generated from quarterly groundwater samples collected from these wells suggest that additional off-site plume characterization in the shallow aquifer zone west of the facility may be warranted.

For example, trichloroethene (TCE) concentrations measured in groundwater samples collected from the off-site shallow monitoring wells (SMW-13 & -15) between August 1988 and August 1989 were between 100 and 1,000 ppb. Elevated levels of TCE were again recorded during the latest sampling round (May, 1990) on the American Steel property. TCE concentrations in SMW-13 and SMW-15 were 160 ppb and 490 ppb respectively (Plate 4). Similarly, elevated levels of certain aromatic compounds such as xylene have been recorded in groundwater samples collected from the southwest portion of the facility and in an off-site soil-gas survey conducted in this area.

Three additional off-site shallow monitoring wells are proposed. Wells SMW-18 and 19 (Plate 2) are situated on the American Steel property and have been located on the basis of groundwater gradients (Plate 3) and chemical concentration maps. The site for SMW-20 is located on the property operated by the Index Corporation. All proposed well-site locations are approximate, pending access approval and utility clearance.

Borings designated for monitoring wells will be drilled using hollow-stem auger methods and will be completed as 4-inch wells using procedures described in the approved DCQAP. It is anticipated that the wells will be completed similar to wells SMW-8, -12, -13, and -15 to approximately 26 feet total depth, and the screened interval will be between 10 and 25 feet below ground surface (bgs). A typical single-cased well completion diagram is shown on Plate 5. Final completion specifications will be determined on the basis of lithology encountered during drilling.

On-site Shallow Monitoring Wells

The presence of VOCs in the groundwater under the property adjacent to the east side of the VW&R facility was reported in a preliminary groundwater investigation, conducted by former

tenants of the property. The origin of these constituents has not been determined. However, available groundwater elevation data suggests that the adjacent facility may be, in part, up gradient from the VW&R facility. A shallow monitoring well, SMW-21, is proposed in a location approximately mid-way between SMW-3 and SMW-9, Plate 2. A well in this location will provide additional data on groundwater elevation and chemical constituents in the area. The data will assist in determining the origin of the observed VOCs under the adjacent property.

The well will be drilled as described above and completed in a similar manner as wells SMW-3 and SMW-9.

Deep Monitoring Wells

A third deep monitoring well (DMW-3, Plate 2) was proposed in the original Work Plan Addendum (September, 1990). The well was verbally approved by the EPA and was installed during the fall of 1990. Installation methods and completion details were presented in Progress Report XIV and a typical deep monitoring well completion diagram is shown on Plate 6.

Pilot Extraction Wells

A groundwater extraction well was also proposed in the original Work Plan Addendum and was similarly approved by the EPA. This well, EXW-1 (Plate 2), was also installed in the fall of 1990 and will be used to extract groundwater from the shallow aquifer as part of the proposed Interim Corrective Measures (ICM) submitted to the EPA for review on January 4, 1991. Installation methods and completion details were presented in Progress Report XIV and a typical extraction well completion diagram is shown on Plate 7.

Off-site Access

Two of the three proposed off-site monitoring wells will be located on property owned and operated by the American Steel Corporation (Plate 2). American Steel has agreed in principle to an access agreement proposed by VW&R. Final negotiations are presently in progress. The third off-site well, SMW-20, will be installed on property operated by the Index Corporation. A request for access to the property for the purpose of drilling and subsequent monitoring/sampling has been made. A concerted effort, including drilling at night or on weekends, will be made to ensure that business activities at the above facilities will not be affected by VW&R's field work.

SAMPLING SCHEDULES

A request was made to the EPA to allow semi-annual rather than quarterly monitoring of the existing sixteen monitoring wells at or adjacent to the VW&R facility. Tentative approval was granted by the EPA for semi-annual groundwater sampling, prior to the implementation of ICMs, on those monitoring wells which have been in place for more than one year. Formal approval from the agency will be granted only after a revised sampling schedule has been reviewed and accepted. Under these guidelines the only well which will not immediately qualify for semi-annual monitoring is DMW-3.

Table 1 lists the proposed sampling schedule for the next two years for the existing wells as well as those proposed in this addendum.

Monitoring wells SMW -1, -4, -5, -6, -7, -8, and -12 are designated ICM monitoring wells and will be used to monitor the effectiveness of groundwater extraction in reducing contaminant concentration levels in the groundwater. These wells will be sampled on a semiannual basis until start-up of the groundwater treatment system which has been proposed as an ICM for the facility. Start-up is defined as the implementation of groundwater extraction on a continuous basis. Once groundwater extraction has commenced, these wells will be sampled according to the schedule proposed in the ICM Work Plan.

Groundwater samples will be collected from newly installed monitoring wells immediately after well development. The newly installed wells will subsequently be sampled according to the schedule listed in Table 1.

TABLE 1: PROPOSED GROUNDWATER SAMPLING SCHEDULE - 1991/92

	2/91	5/91	8/91	11/91	2/92	5/92	8/92	11/92
SMW-1*		X		X		X		X
SMW-2		X		X		X		X
SMW-3		X		X		X		X
SMW-4*		X		X		X		X
SMW-5*		X		X		X		X
SMW-6*		X		X		X		X
SMW-7*		X		X		X		X
SMW-8*		X		X		X		X
SMW-9		X		X		X		X
SMW-10		X		X		X		X
SMW-11		X		X		X		X
SMW-12*		X		X		X		X
SMW-13		X		X		X		X
SMW-15		X		X		X		X
SMW-16		X		X		X		X
SMW-17		X		X		X		X
SMW-18**		X	X	X	X	X		X
SMW-19**		X	X	X	X	X		X
SMW-20**		X	X	X	X	X		X
SMW-21**		X	X	X	X	X		X
DMW-1		X		X		X		X
DMW-2		X		X		X		X
DMW-3	X	X	X	X		X		X

* Designated ICM monitoring well.

(These wells will be sampled on the proposed ICM sampling schedule upon implementation of groundwater extraction. See text of this Work Plan Addendum for a more detail explanation.)

** Newly installed wells will be sampled immediately after development, then subsequently according to the proposed schedule. Tentatively scheduled for installation 3/91.



Topographic Base from 7 1/2 min. Quadrangle: Portland, Oreg.- Wash. (1977)

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Site Location Map
Work Plan Addendum
Van Waters & Rogers, Inc.
Portland, Oregon

PLATE

1

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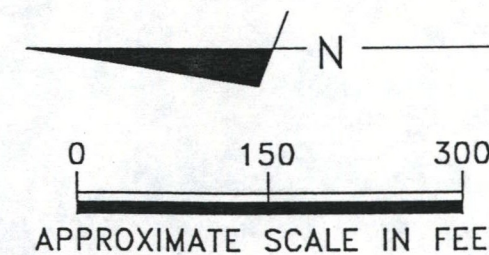
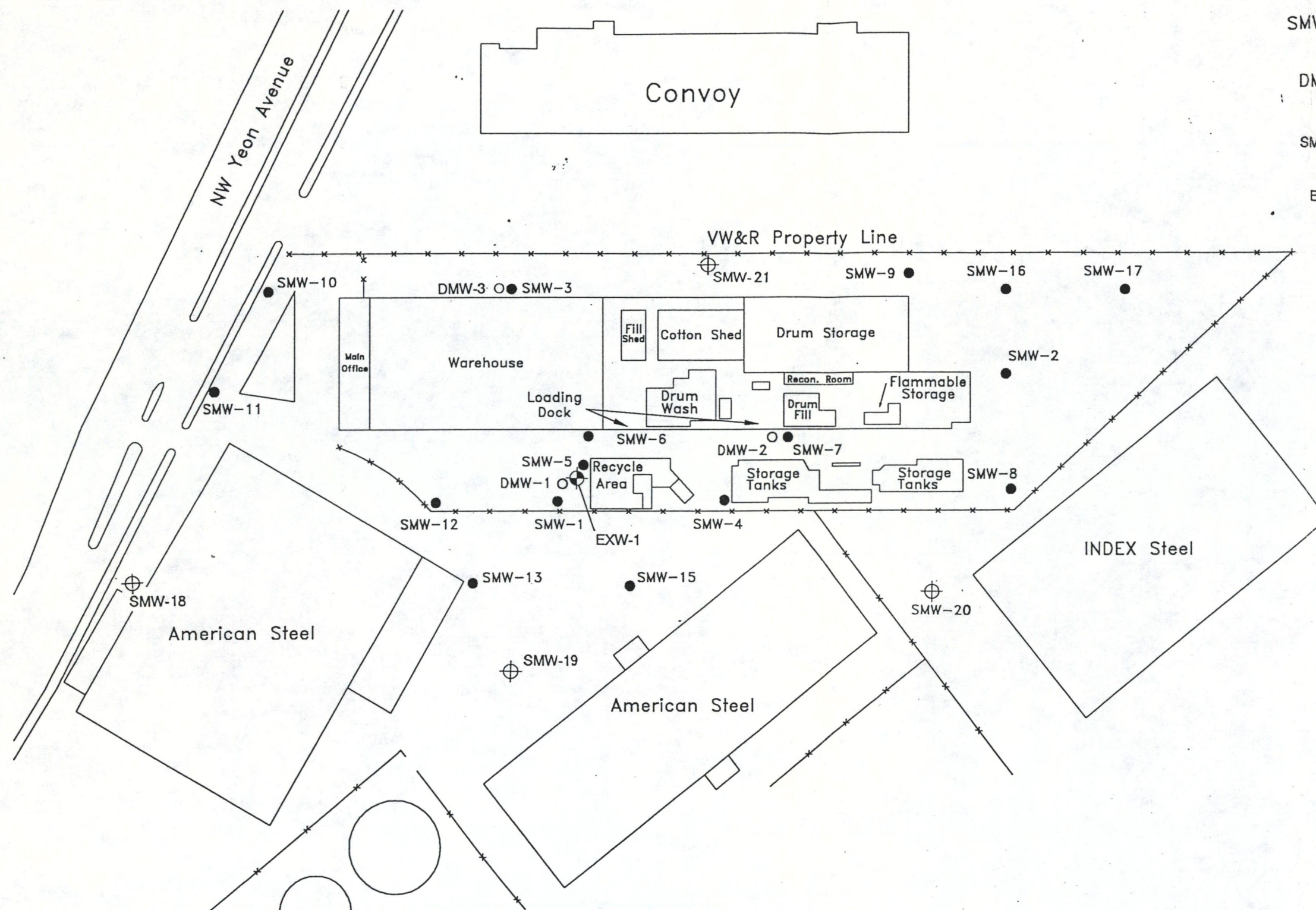
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DATE

EXPLANATION

- SMW-15 ● Groundwater Monitoring Well - Shallow Aquifer
- DMW-1 ○ Groundwater Monitoring Well - Deep Aquifer
- SMW-18 ⊕ Proposed Groundwater Monitoring Well Location
- EXW-1 ⊕ Groundwater Extraction Well Location



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**Groundwater Monitoring and
Extraction Well Locations**
Work Plan Addendum
Van Waters & Rogers, Inc.
Portland, Oregon

PLATE

2

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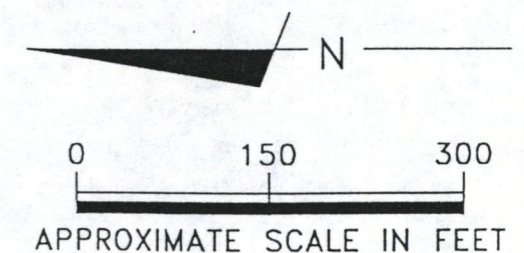
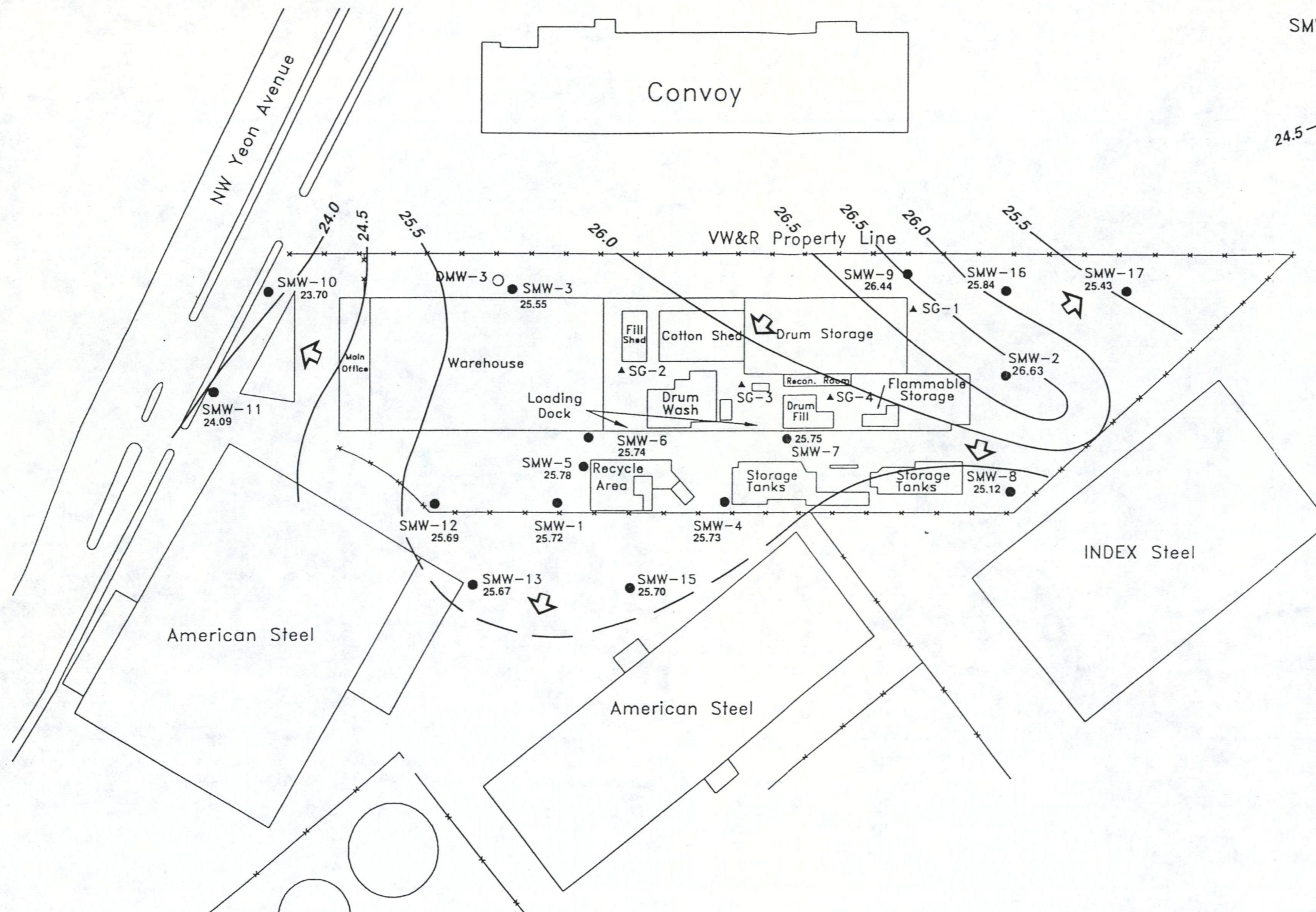
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1/91

EXPLANATION

- SMW-15 ● Groundwater monitoring well shallow aquifer zone
- 25.70 Water-level elevation in feet above mean sea level
- 24.5 Groundwater elevation contour in feet above mean sea level based on water-level measured on November 26, 1990 (Dashed where approximate)
- Approximate direction of groundwater flow



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**Water-Level Elevation Map,
Shallow Aquifer Zone**
Work Plan Addendum
Van Waters & Rogers, Inc.
Portland, Oregon

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MBH 12/90 1/91

EXPLANATION

- SMW - 6 ● Location of VW&R monitoring well
- 88,000 Chemical concentrations in $\mu\text{g/l}$
- * Average value of duplicate samples
- ** Average value of 8010/8020 analysis(es) results and 8240 analysis results

Chemical concentration contour in $\mu\text{g/l}$ based on groundwater samples collected November 27 and 28, 1990 (Dashed where approximate)

10

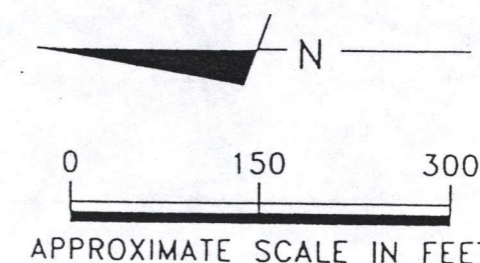
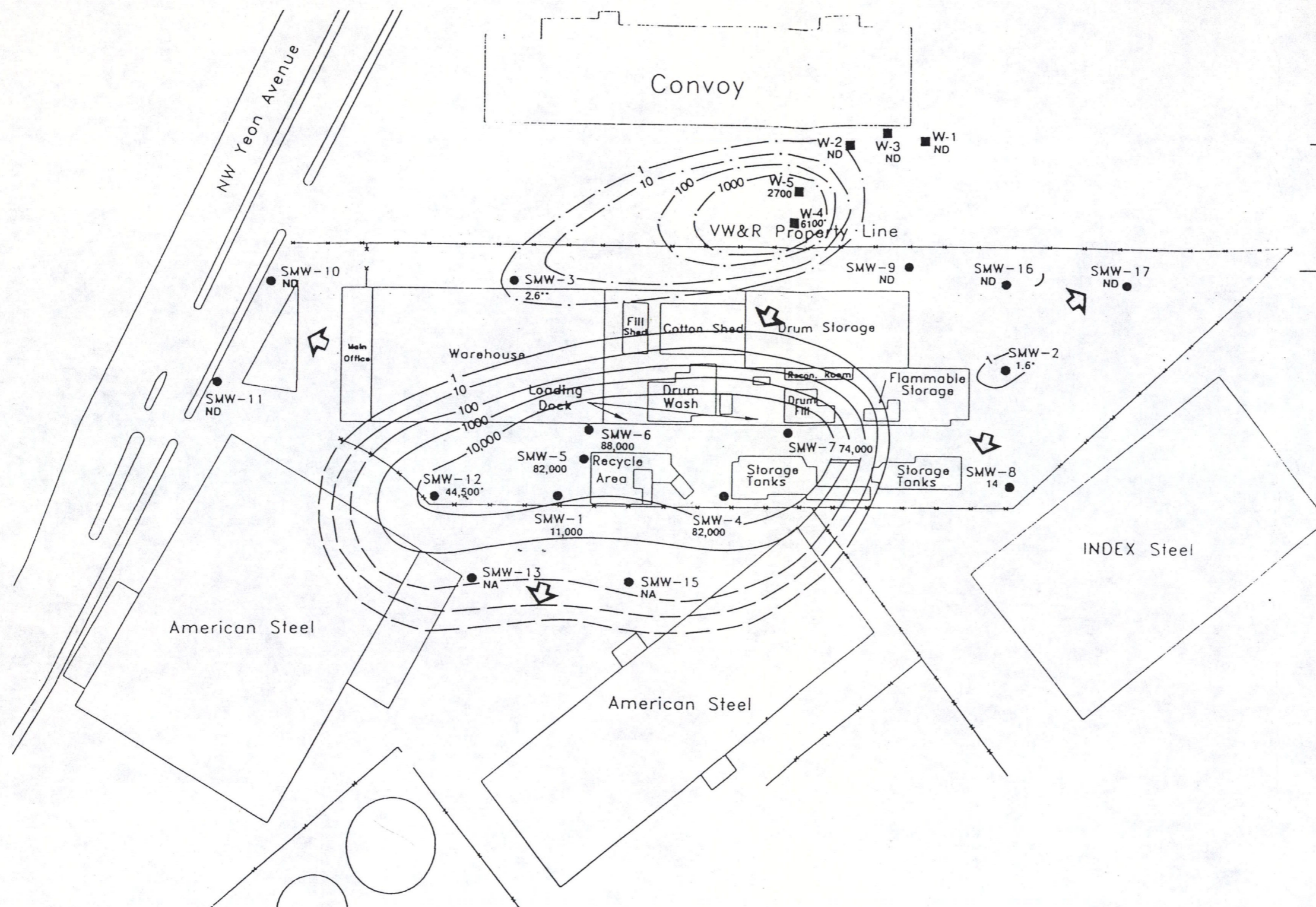
W-5 2700
Approximate location of Convoy monitoring well w/ chemical concentration in $\mu\text{g/l}$
Source of data: Brown and Caldwell, 1990.

10
Chemical concentration contour for Convoy data.

Approximate direction of groundwater flow based on water-level elevations measured on November 26, 1990.

ND Chemical not present above the detection limit

NA Data not available (May, 1990 data used for concentration contours)



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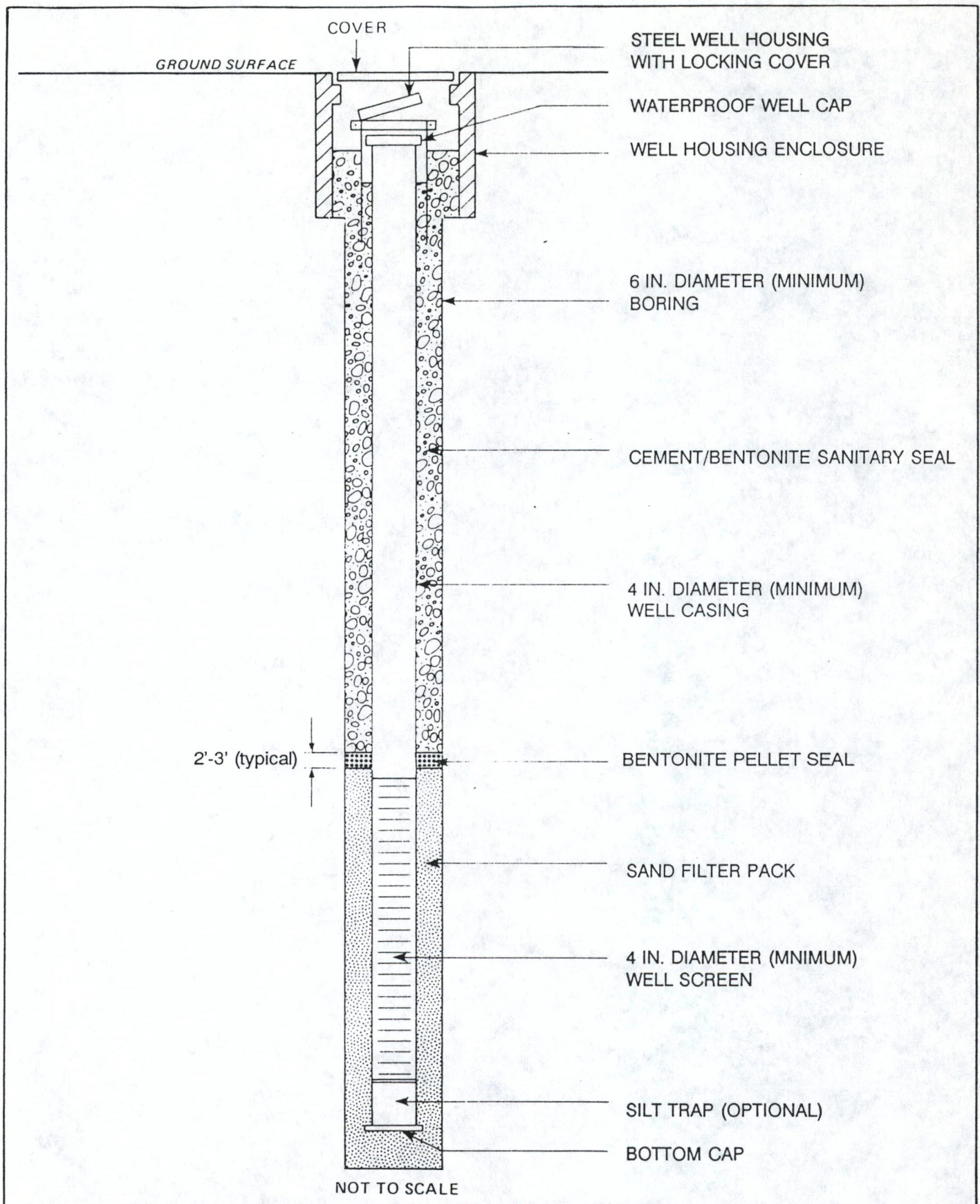
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Trichloroethene Concentrations in Groundwater
Work Plan Addendum
Van Waters and Rogers, Inc.
Portland, Oregon

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PLATE

4



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**Below-Grade Single Casing
Well Completion Diagram**
Work Plan Addendum
Van Waters & Rogers, Inc.
Portland, Oregon

PLATE

5

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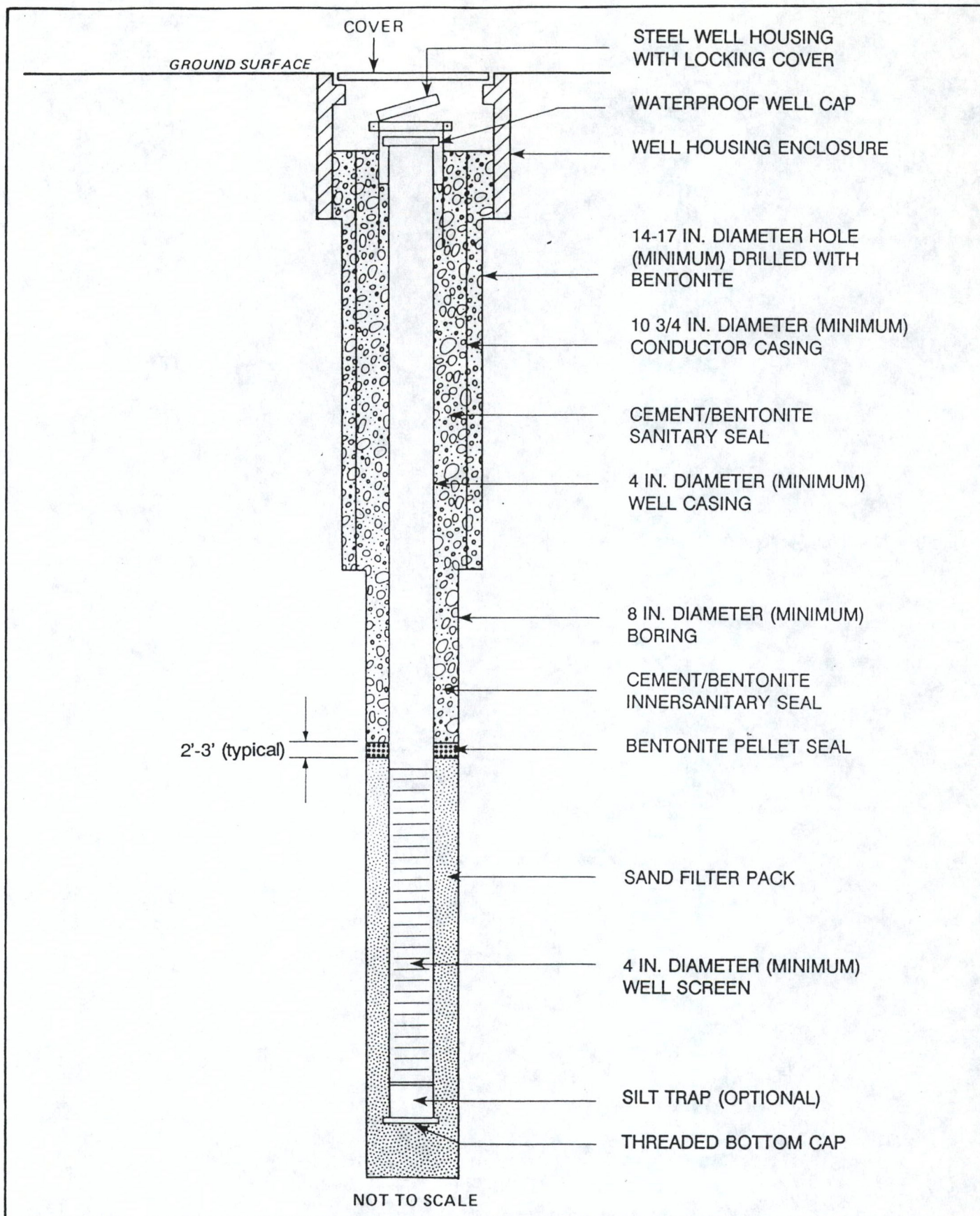
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**Below-Grade Double Casing
Well Completion Diagram**
Work Plan Addendum
Van Waters & Rogers, Inc.
Portland, Oregon

PLATE

6

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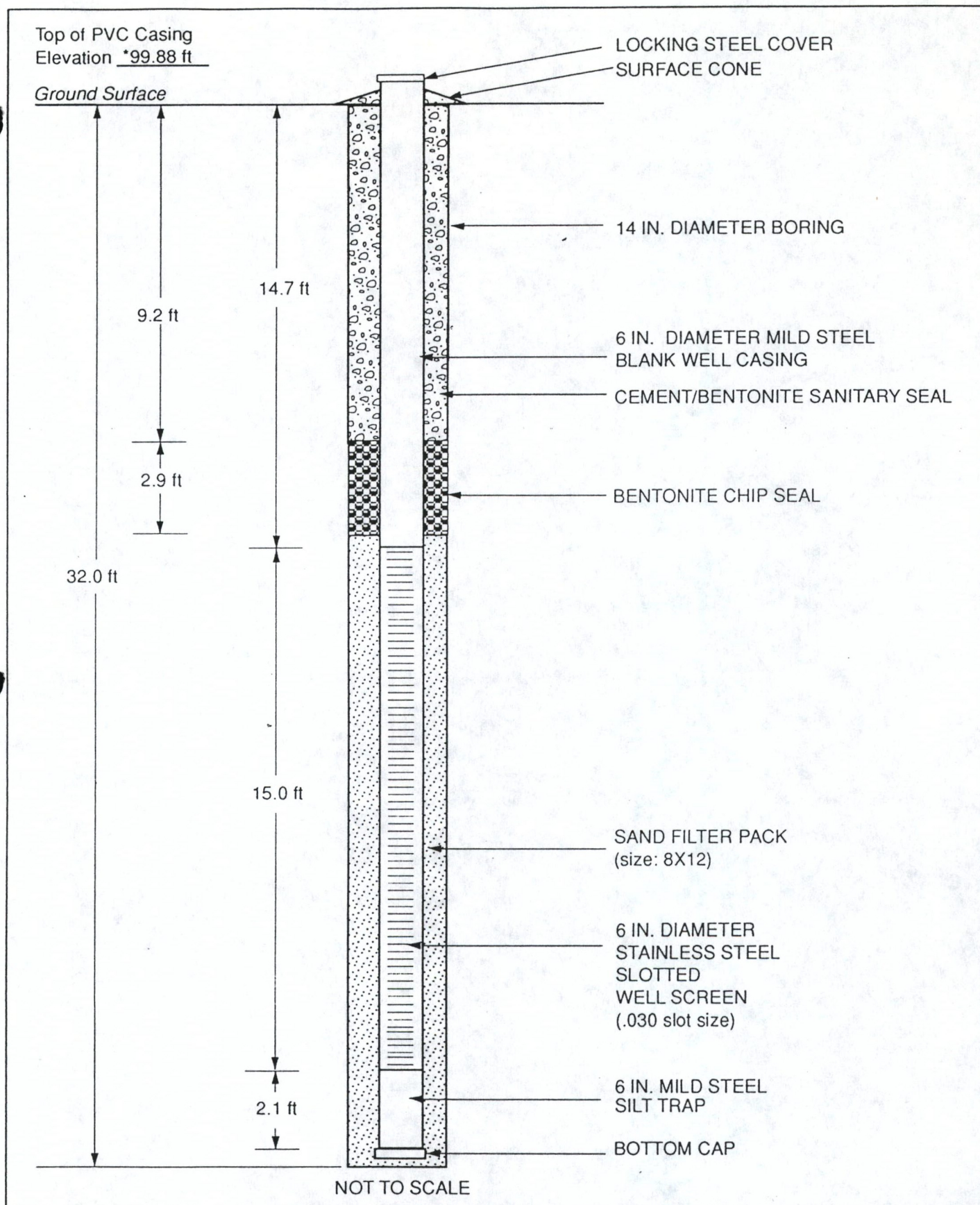
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Well Completion Detail EXW-1
Work Plan Addendum
Van Waters and Rogers, Inc.
Portland, Oregon

PLATE

7

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